and the day's work, was adjudged simply upon the merits of her reports and work to the one lady among the thirty-nine students who formed the class. On the other hand, this fact will probably stimulate that unavowed feeling, akin to the trades-unions' hostility to competition, which is the cause of the arbitrary exclusion of half of the community from our greatest educational institutions. — E. R. L., *in Nature*.

CONTRIBUTIONS TO THE NATURAL HISTORY OF THE VALLEY OF QUITO. — II.

BY PROF. JAMES ORTON.

REPTILES.

THE herpetology of mountain regions is very limited, for the number of species diminishes rapidly as we ascend in altitude or latitude. The reptilian life of any district, however, is highly interesting, as it is more natural and well defined than that of other vertebrates, because reptiles have a limited range* and are less likely to be forced out of their original habitats or introduced by man. It has been supposed that in order of altitudinal range, lizards go highest, snakes next, and batrachians and chelonians last. There are no chelonians in the valley as far as we know; but we found frogs as high up as Antisana Hacienda, and no lizards there. Gibbon found no snakes at La Paz.

The only reptiles which we know to exist in the valley are as follows: *Batrachians*—*Atelopus longirostris* Cope (a new species found by the writer at Antisana Hacienda, thirteen thousand three hundred feet above the sea), *A. lævis* Günth., *Hylodes conspicillatus* Günth., *Bufo intermedius* Günth.; *Ophidians*—*Herpetodryas carinatus* Boie, *Streptophorus Drozii* D. B. An active little lizard (a Pleurodont) occurs in the warm, dry parts of the valley; but we failed to secure a specimen.

FISHES.

Considering the size of the Machangara and Pastassa Rivers

* A remarkable exception is presented by our common Snapping-Turtle, *Chelydra serpentina* Linn., which we found at Guayaquil on the Pacific coast, 2° below the equator.

and San Pablo Lake, it is remarkable that only one species of this class (so far as we can ascertain) occurs in the Quito waters. This is the *Cyclopium Humboldtii* Sw., one of the Siluridæ. It abounds in the Machangara, but we have never seen a specimen over four inches long. According to Dr. Gill it is generically distinct from the *Stygogenes Humboldtii* of Günther; but we cannot distinguish it from the *Pimelodus cyclopum* mentioned by Humboldt* as in-

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*NOTE ON THE PIMELODUS CYCLOPUM OF HUMBOLDT. By F. W. Putnam.

Professor James Orton, in 1870, presented to the Academy a specimen of a small Silurid which he obtained at Quito, Ecuador, and which he supposed was the same as the fish mentioned by Humboldt from the subterranean waters of the Andes. On comparing the fish with the descriptions of the species of *Arges* and *Stygogenes*, given by Cuvier and Valenciennes, and by Günther in his Catalogue, I cannot see any reason for keeping the genera apart, as the specimen in hand unites the characters of the two. Agreeing in every detail with the short description given by Günther of *Arges brachycephalus*, with the additional character of having a short broad spine in front of the adipose dorsal, it has the serrations on the outer rays of the several fins which he mentions as characteristic of *S. Humboldtii.*

Our specimen has the following characters, which, it will be noticed, are taken almost word for word from the descriptions given by Günther of *A. brachycephalus* and *S. Humboldtii.* Head one-fifth of the total length of the fish. Eyes situated on top and about in the middle of the length of the head, very small, black. Nostrils are much nearer the extremity of the snout than to the eyes. Upper jaw slightly projecting. Lips thick, under lip, or labial fold, emarginate behind. Teeth in three or four rows, more or less notched; those on under jaw a little the broadest and with slightly deeper notches. The outer rays, or spines, of first dorsal, pectorals, ventrals, anal and caudal fins slightly prolonged and provided throughout their length with small spines projecting backward. Adipose fin moderately long, low, and reaching to base of upper caudal ray, a short broad spine at its front base *buried in the skin.* This spine is hardly equal in length to one-eighth of the length of the head. Longest rays of pectoral and ventral about equal in length. Pectoral rays reaching a little beyond the base of the ventrals. Ventral ray filament reaches to anus. Ventrals situated about under origin of dorsal. Color of the specimen brownish with dark motlings. Lateral line distinctly marked by raised pores, and extending the whole length of the body. Maxillary barbles about one-half the length of the head. Anal and dorsal fins fold into slight grooves.

	Fin formula of					
	D.	A.	C.	P.	V.	
Academy specimen,	I+7, I.	I+5.	I+5+6+I=13.	I+8.	I+5.	
A. brachycephalus,	I+6, 0.	6.	. . . . .	I+9.	6.	Günther.
S. Humboldtii.	6, I.	6.	13.	8.	6.	"

This slight variation in the fin rays would give the following for the three specimens. 1st dorsal, 6 to 8. 2d dorsal, 0 to 1. Anal, 6. Caudal, 13. Pectoral, 8 to 10. Ventral, 6; or allowing for a variation of two rays in the first dorsal and pectoral fins (which might very easily be an error in counting) we have the difference in the fin formula of the three specimens reduced to the presence or absence of the spine of the adipose dorsal, which could very easily be overlooked unless special search was made for it, as in the specimen under examination, in which it was found covered by the skin of the fin.

Under these considerations I can but think it probable that Humboldt overlooked the spine in his specimen, and also that it is possible that Günther overlooked it in his specimens of *A. brachycephalus.* At all events I cannot regard its presence as of any generic or even specific value on the present data.

habiting the subterranean waters of the Andes and thrown out in the eruptions of Imbabura and Caraguairazo. There are several species of the same family in the Esmeraldas, as *P. cinerascens*, *P. elongatus* and *P. modestus*.

MOLLUSCS.

There is little variety of molluscan life on the Andes. The land-snails predominate, belonging to the *Helicidæ* and *Cyclostomidæ*. The presence of the old world genus Clausilia, wanting in North America, becomes a significant fact, as Woodward observes, when taken in connection with the affinities of the higher animals of South America and Africa. "These imply a land-way across the Atlantic at some very remote period."

The known fresh-water shells in the valley are few in number, and the exact localities of these cannot be positively given. *Castalia Crosseana* Hid., and *C. Pazi* Hid., are credited to Imbabura; *Hemisinus Pazi* Tryon, *H. simplex* Tryon, *H. Osculati* Villa, *Ampullaria modesta* V. d. Busch and *A. solida* V. d. Busch to Quito; and *A. Quitensis* V. d. Busch to Ecuador. But Mr. Tryon informs me that the locality of Hemisinus is not certain; and as I collected none myself, I am doubtful of all the others except Castalia. *Hemisinus Binneyi* Tryon, may be added to this provisional list.

The type of the genus Arges (*A. sabalo* C. and V.), from the position of the eyes and ventral fins, may possibly remain as the type of a genus under that name, distinct from Günther's genus Stygogenes, which I consider as covering my specimen as identical with his *S. Humboldtii* and *A. brachycephalus*, which I consider the same as Humboldt's *Pimelodus cyclopum*. As Cuvier and Valenciennes had this last as a species of their genus Arges, and as Günther includes it (doubtfully) as a distinct species in his genus Stygogenes, and as Swainson also named it *Cyclopium Humboldtii*, we have a singular confusion of names, which, following the strict law of priority of names given, should be rendered thus:—

CYCLOPIUM (Sw.) CYCLOPUM (Humb.)

Synonyms.

1. *Pimelodus cyclopum* Humboldt, 1803.
2. *Cyclopium Humboldtii* Swainson, 1838-9.
3. *Arges cyclopum* Cuv. and Val., 1840.
4. *Arges brachycephalus* Günther, 1859.
5. *Stygogenes Humboldtii* Günther, 1864.
6. *Stygogenes cyclopum* Günther, 1864.

Of these six names given as synonyms, Nos. 1, 2, 3 and 6 were unquestionably proposed for the same fish, and No. 5 was separated from them wholly because Humboldt did not mention the spine of the 2d dorsal. No. 4 was considered as distinct, and placed in a separate genus on account of the spine not being present. The specimen now under examination has a spine, and with it all the characters given of the species, hence I unite them all as one under the terribly non-euphonic designation of *Cyclopium cyclopum*, adding one more name to the list, which will be adopted, or classed as a synonym, according to individual views, but which, nevertheless, is the name that should be used to designate the species if the strict law of priority is followed.

The following *Notes on the Terrestrial Mollusca of the Valley of Quito, with a Catalogue of the species*, have been contributed by the eminent conchologist, Mr. Thomas Bland.

Looking at the subjoined catalogue* of the Terrestrial Mollusca attributed to, or which are known to inhabit, the valley of Quito,

* The following catalogue has been compiled from the various works to which I have had access. The genera and species are arranged in the order given by Pfeiffer in his Monographs, and the figures refer to the sections into which he divides the species. The subgeneric names of *Bulimus* in small capitals and of others in italics are from the last edition of Albers by v. Martens. The species, the names of which are in italics have been described since the publication of the latest editions of Pfeiffer's Monographs: —

Helix Quitensis Pfr. — Quito, (*Hyalina.*) §11.
" Flora Pfr.—Quito. (*Ammonoceros.*) §35.
" Æquatoriana Hid.—Ecuador, Paz. §102.
" cymatodes Pfr. — Quito, Pfeiffer; Napo, Martinez. (*Isomeria.*)
" æquatoria Pfr. — Ecuador, Fraser.
" Juno Pfr. — Quito, v. Martens and Orton; Baeza, Martinez. (*Isomeria.*)
" Bourcieri Pfr. — Otovalo, Bourcier; Nanegal, Martinez and Orton, (*Isomeria.*)
" claromphalos Dev. et Hupe. — Quito, Paz; Cuzco, Hupe. § 113.
" Martinii Bern.—Quito, Bernardi. (*Isomeria.*) §118.
" bituberculata Pfr. — Quito, Paz and Martinez; Tunguragua, Bourcier. (*Isomeria.*)
" entodonta Pfr. — Cuenca, Fraser. §121.
" atrata Pfr. — Quito, v. Martens and Orton; Puntophaya, Bourcier; Macas and Napo, Martinez; Marmato, N. Granada, Bland. § 123.
" Hartwegi Pfr.—El Catamaija near Loja, Hartweg. (*Isomeria*).
" *Ortoni* Crosse. — Between Quito and Napo? Orton.

Bulimus Phœbus Pfr. — Ecuador, Pfeiffer. §3.
" Popelairianus Nyst. — Quito, Isern; Bodegas, Paz; Napo, Martinez, and Orton. (BORUS.) §6.
" irroratus Rv. — Quito, v. Martens and Orton; La Mocha and Guaranda, Paz; Macas and Nanegal, Martinez; New Granada, Pfeiffer. (DRYPTUS.)
" Fungairinoi Hid. — Quito, Hidalgo and Orton; Cuenca, Paz and Martinez.
" *Corydon* Crosse. — Quito, Paz.
" *Aristæus* Crosse. — Quito, Paz and Orton.
" integer Pfr. — Quito, Ida Pfeiffer. (DRYPTUS.) §8.
" Fraseri Pfr.—Cuenca, Fraser; Chimborazo, Paz.
" abscissus Pfr.—Quito, Pfeiffer. §9.
" Bourcieri Pfr.—Pichincha, Bourcier. (*Thaumastus*).
" coloratus Nyst.—Near Quito, Lattre; Prov. Cumana, Columbia, Nyst. (DRYPTUS). § 10.
" cardinalis, Pfr. — Quito, Pfeiffer and Paz; Quito and Nanegal, Orton; Napo, Martinez. (EURYTUS.)
" Membrilelinus Crosse.—Ecuador, Paz and Hidalgo; Napo, Martinez. §18.
" lautus Gould.—Near Quito, Couthouy. §37.
" Nystianus Pfr. — Quito, Martinez; Machache, Paz; Valley of Pomasqui, Bourcier. (*Thaumastus.*)
" decoratus Lea. — Near Quito, Paz; Chimborazo, Pfeiffer; Carthagena, Lea. (*Drymaeus.*)

Bulimus fallax Pfr. — Tunguragua, Bourcier; Quito, Paz and Martinez. (*Thaumastus.*)
" Hartwegi Pfr. — El Catamaija near Loja, Hartweg; Quito and Cuenca, Paz and Orton. (*Thaumastus.*) §39.
" Thompsoni Pfr. — Near Quito, Pfeiffer and Orton; Machache and Cuenca, Paz. (ORPHNUS.)
" Taylorianus Rv. — Quito and Chimborazo, Bourcier; Quito, Paz and Orton. (EURYTUS.) §40.
" haplostylus Pfr. — El Catamaija near Loja, Hartweg. § 44.
" Cuencanus Pfr. — Cuenca, Fraser.
" Anthisanensis Pfr. — Antisana, 14000 ft., Bourcier. (*Scutalus*) § 48.
" caliginosus, Rv. — Tunguragua and Chimborazo, Bourcier; Chimborazo, Paz. (*Scutalus.*) §49.
" subfasciatus Pfr. — Antisana, Bourcier.
" ambustus, Rv.—Tacunga and Ambato, Bourcier; La Mocha, Paz; Alchipichi, Martinez. (*Thaumastus.*)
" Quitensis Pfr. — Quito, Delattre; Ibarra and Otovalo, Martinez. §51.
" irregularis Pfr.—Near Quito, Lattre, Ibarra, Otovalo and Pillaro, Martinez.
" Cotopaxiensis Pfr. — Cotopaxi, Pfeiffer; Antisana and Pichincha, Martinez; La Mocha and Chimborazo, Paz; var. B. Cayembe, Bourcier. (*Scutalus.*) § 54.
" Loxensis Pfr. — El Catamaija near Loja, Hartweg. (*Thaumastus.*) §56.
" chamæleon Pfr. — Quito, Bourcier; La Mocha, Paz; Cumbaya, Baeza and Nanegal, Martinez; Peru, Almagro. (*Thaumastus.*)
" æquatorius Pfr. — Sincholagua and Chimborazo, Bourcier; Quito, Paz, Orton and Martinez; La Mocha, Paz. *Scutalus.*) §57.
" Catlowiæ Pfr. — Near Quito, Bourcier; Ambato, Paz. (*Scutalus.*)
" Limensis Rv. — Near Lima and Quito, Pfeiffer.

Orthalicus Mars Pfr.—Ecuador, Fraser. § 3.
Achatina magnifica Pfr.—Near Quito, Delattre. §1.
Oleacina saccata Pfr.—Ecuador, Fraser. § 6.
Clausilia Bourcieri Pfr.— Tunguragua, Bourcier. (*Nenia*) §3.
Cyclotus Quitensis Pfr.—Quito, Paz and Orton; Napo, Martinez; New Granada, Bland. § 1.
" Dunkeri Pfr. — Riobamba, Pfeiffer; New Granada and Venezuela.
" Popayanus Lea.—Chimborazo, Linden; New Granada, Bland.
" granulatus Pfr.—Quito, Paz.
" *Fischeri* Hid. — Quito, Paz; Aguarico, Martinez.

it does not appear that any considerable number of the species have passed beyond its limits. The most interesting question respecting their distribution, is to ascertain if any occur both on the Pacific and Atlantic slopes of the Equatorial Andes, and so far as I am informed there are scarcely any. While several of the valley species are found also to the south in Peru, and a larger number to the north in New Granada, others are common to the valley and the eastern slope towards the headwaters of the Amazon.

The species mentioned in the catalogue, which from the habitats given appear to occur on the Pacific and Atlantic slopes, are *Bulimulus chamœleon* Pfr. referred to Nanegal on the former and Baeza on the latter, *Bulimus irroratus* Rv. from Guaranda and Macas, and *B. Popelairianus* Nyst. from Bodegas and Napo. Further exploration may increase the species known thus to occur, but the difference in the land-shell faunas on the Pacific and Atlantic slopes on the west coast of North America, warrants the belief that such species are few.

The absence in the Quito valley, and generally on the west coast of South America, of various New World genera is worthy of remark, but they belong to the faunas of Brazil, Mexico, and the West Indies, with which those of the west coast have a scarcely appreciable alliance.

In South America generally, and the valley of Quito is no exception, the genus Bulimus has far more representatives than Helix (using both generic terms in the wide sense employed by Pfeiffer in his monographs), but the reverse is the case in North America. In the Galapagos Islands there are a number of peculiar Bulimi, but I believe no Helices, while in the islands off the west coast of southern California species of Helix occur but none of Bulimus. On the Atlantic side of the Continents, the islands (Cuba, Jamaica etc,) situate on the northern margin of the Caribbean sea, with numerous species of Helix, have very few of Bulimulus, while the islands on the eastern side, near to the South American coast (St. Lucia and St. Vincent to Trinidad) have the only representatives of Bulimus in the West Indies and a larger proportionate number of species of Bulimulus.

Cyclotus *Pazi* Crosse.—Ambato, Paz.
Cyclophorus Cumingi Sow. — Quito, Paz. § 15.
" hæmatomma Pfr. — Quito, Paz.
" *Hidalgoi* Crosse.—Ecuador, Paz.
Cyclophorus *Crosseanus* Hld.—Ecuador, Paz.
Bourciera helicinæformis Pfr. — Quito, Paz.; [Yaraqui Valley, Bourcier.
Bourciera Fraseri Pfr. — Cuenca, Fraser.

The form of Helix prevailing in, and which may be said to be characteristic of the Quito Valley is Isomeria, peculiar to the northern portion of the southern continent. Both Bulimus and Bulimulus are essentially characteristic of South America.

The genus Orthalicus is also South American, but belongs rather to the eastern than to the western side of the continent. *Achatina magnifica*, as Pfeiffer suggests, is probably an Orthalicus. Oleacina is most numerously represented in Mexico and Central America, and the nearest adjacent islands of the West Indies. One species is said to inhabit Ecuador, but the exact locality is not given.

Clausilia is a European genus, but has representatives in Asia, and a few species of the sub-genus Nenia in South America,—one only in the West Indies, *C. tridens* Chem. of Porto Rico. Species of three operculated genera occur in the Quito Valley,—Cyclotus, Cyclophorus and Bourciera. The latter, peculiar to Ecuador, is placed by Pfeiffer, in the sub-family Realia of the family Cyclostomacea, but it would seem to belong to Helicinacea, with which, as pointed out by Troschel, its dentition agrees, although in form of shell it is allied to Realia. Cyclotus has several species in Mexico and Central America, more in South America, but forty-two species in the West Indies, of which thirty-four belong to Jamaica. It may be mentioned that half of the species attributed to the valley of Quito, occur also in New Granada.

Cyclophorus has its principal development in Asia and adjacent islands, but it is curious, as I have elsewhere noticed, that while there are a few species found in Mexico, Central and South America, seven occur in the West Indies, and all in Guadeloupe, Dominica and Martinique.

NOTES ON THE GEODES OF ILLINOIS.

BY PROF. GEORGE H. PERKINS.

Not least interesting among the many localities in the Mississippi valley that attract the geologist and mineralogist is the Illinois Geode region. This extends for twenty-five or thirty miles